Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER II (NEW) – • EXAMINATION – SUMMER 2016

Subject Code: 2720511 **Date: 04/06/2016**

Subject Name: CMOS CIRCUIT DESIGN - I

Time:10:30 am to 01:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain the effect of technology scaling on the performance of CMOS inverter.	**07**
	(b)	Describe the MOS small signal model.	**07**
Q.2	**(a)**	Describe the concept of static and dynamic CMOS circuit.	**07**
	(b)	Explain the following circuits (Any two) (i) Adder Circuits (ii) Multiplier (iii) Shifter	**07**
		OR	
	(b)	Explain difference between single ended and differential operation.	**07**
Q.3	**(a)**	Describe the basic MOS device physics and general consideration of MOS parameters.	**07**
	(b)	What aspects of the performance of an amplifier are important?	**07**
		OR	
Q.3	**(a)**	Explain in detail folded cascode amplifier.	**07**
	(b)	Explain differential pair with MOS load.	**07**
Q.4	**(a)**	Explain Gilbert cell.	**07**
	(b)	Explain common source stage with diode connected load.	**07**
		OR	
Q.4	**(a)**	Explain input output characteristic of CS configuration.	**07**
	(b)	Explain basic differential pair and analysis.	**07**
Q.5	**(a)**	Explain 3 – stage ring oscillator.	**07**
	(b)	Explain compensation of two stage op amp and also explain other compensation techniques.	**07**
		OR	
Q.5	**(a)**	Describe the two stage op-amp and define slew rate & common mode feedback.	**07**
	(b)	Explain I/V characteristic of MOS.	**07**

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